

## ABSTRACT

5 A method and apparatus for hyper-dense communications provides a photonic signal, such as an optical or radio frequency signal produced with substantially reduced sidebands. Signals may be filtered photonicallly, such as by a photonic transistor or photonic drop filter, to remove such frequency components. The resulting bandwidth of the photonic output signal is narrower in the photonic domain than the bandwidth of the information it carries in the original domain of the information. This hyper-dense signal is then transmitted and received. Such signals retain their reduced spectral distributions while in the photonic domain. Upon reception and conversion into electronic form, the full spectrum of the original information may be restored, including the sidebands, by passing the transmitted signal through a non-linear device.

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